

Operator's manual

Video Sweep Generator MVG 10



Order no.: 208 320

KATHREIN
Antennen • Electronic

Dear customer,

This handbook aims to help you use the various functions of the MVG10 in the optimal manner. Please pay attention to all instructions. Kathrein-Werke KG has made every effort to ensure the information and descriptions are correct and complete.

We reserve the right to make changes to this handbook without prior notice. In particular, this applies to changes made due to technical advancements.

We are always grateful to receive your comments and suggestions for improvement.

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All product names and trademarks in this handbook are the property of the respective companies.

Please read the safety notes carefully!

Yours,

The KATHREIN team

Customer service

Please send the unit to the following address in case of defect or for calibration:

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Validity of handbook

This handbook is valid for MVG 10, order no.: 208 320.

The following notes are important for operating the MVG 10 and should be observed under all circumstances.

General safety notes

The MVG 10 was developed and produced in compliance with the relevant harmonised guidelines, standards and additional technical specifications. The product is state-of-the-art and ensures the maximum level of safety.

However, this safety level can only be reached in practice if all of the necessary measures are taken and is subject to the care taken by the operator.

Symbols used

The following symbols are used in this operator's manual. The main aim of these symbols is to bring the user's attention to the text opposite the respective symbol.



Danger! Live component!

This symbol indicates danger to life and health.



Attention!

This symbol indicates that particular attention must be paid to this section of the manual.



Example

This symbol indicates an example of the measurement function being explained.

Safety notes



Always observe the VDE safety regulations.

Observe the maximum permissible signal feed-in level.

Neither DC voltage nor low-frequency AC voltage may be applied to the RF port.

Only use fuses with the same cut-out characteristics.

The unit is live even when not connected.

The unit may only be operated with all shielding covers fitted and when closed to prevent electromagnetic interference. Only use suitable shielded cable.

Improper use during mains operation is a risk to life!



Connections



Improperly connected connections can lead to operating faults or defects in the unit.

Use in accordance with intended purpose



The operator must ensure that

the measuring instrument is only used in accordance with its intended purpose.

the measuring instrument is only used when in good order and fully functional.

the safety and warning notes on the measuring instrument are not removed and remain legible.

Mechanical durability

The MVG 10 is designed for mobile usage and the mechanical demands associated with this. The MVG 10 should not be exposed to heavy mechanical stress such as being struck, knocked or dropped as this can cause damage to the unit.



Electronic equipment must not be disposed of in domestic waste. According to directive 2002/96/EC OF THE EUROPEAN PARLIAMENT AND COUNCIL of 27 January 2003 on waste electrical and electronic equipment, it must be disposed of professionally. Please take this unit to a public collection point intended for this type of disposal at the end of its useful life.

System description and usage

The MVG 10 Video Sweep Generator is designed to selectively sweep and measure the forward path and return path of television cable installations without interfering with the connected subscribers. The required sweep ranges, channels and signal levels (36...100 dB μ V) can be programmed step-by-step. The channels can be set to various standards (e.g. B/G etc.).

Frequency ranges that are in use must be left out so that the subscriber reception is not disrupted.

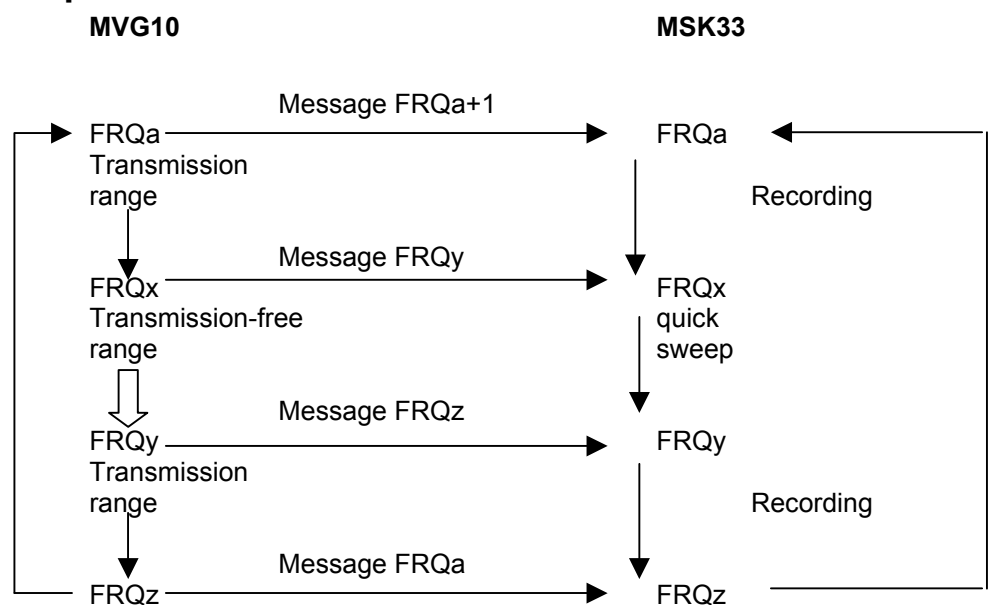


Make a frequency and signal level plan before performing the measurement!

Before each frequency change, the MVG 10 transmits the next reception frequency to the MSK 33 with a telemetric signal. In ranges that are in use and which may not be swept, the MSK 33 can, as an option, continue measurement in the same channel plan at maximum scan speed. The MVG 10 pauses during this period.

The MSK measures the signal levels transmitted and presents them in the spectrum. The measurement can also be printed out with the integrated printer.

Measurement principle



Return path measurement

The MVG 10 is also suitable for measuring the return path – terminal outlet to head-end – in the frequency range 4.0 MHz...80MHz.

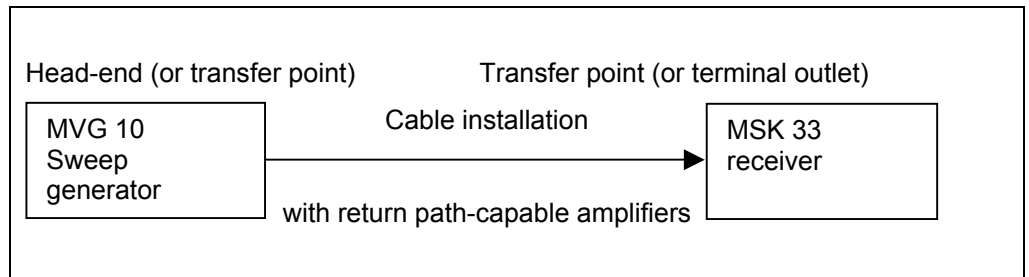
For this, the MSK 33 must be equipped with the return path option.

The MVG 10 Video Sweep Generator must be modulated with a video signal.

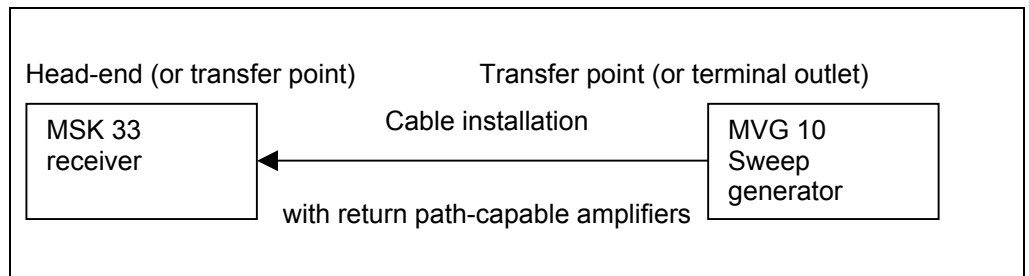
Although measurement can be performed in cables that are in use, the ranges that are in use may not be swept. In addition, the MVG 10 signal generator can sweep in several partial ranges i.e. ranges that are in use can be left out by the sweep generator so that TV reception is not interrupted. The MVG 10 sweep generator informs the MSK 33 of the next respective reception frequency over the RF channel.

System description and usage

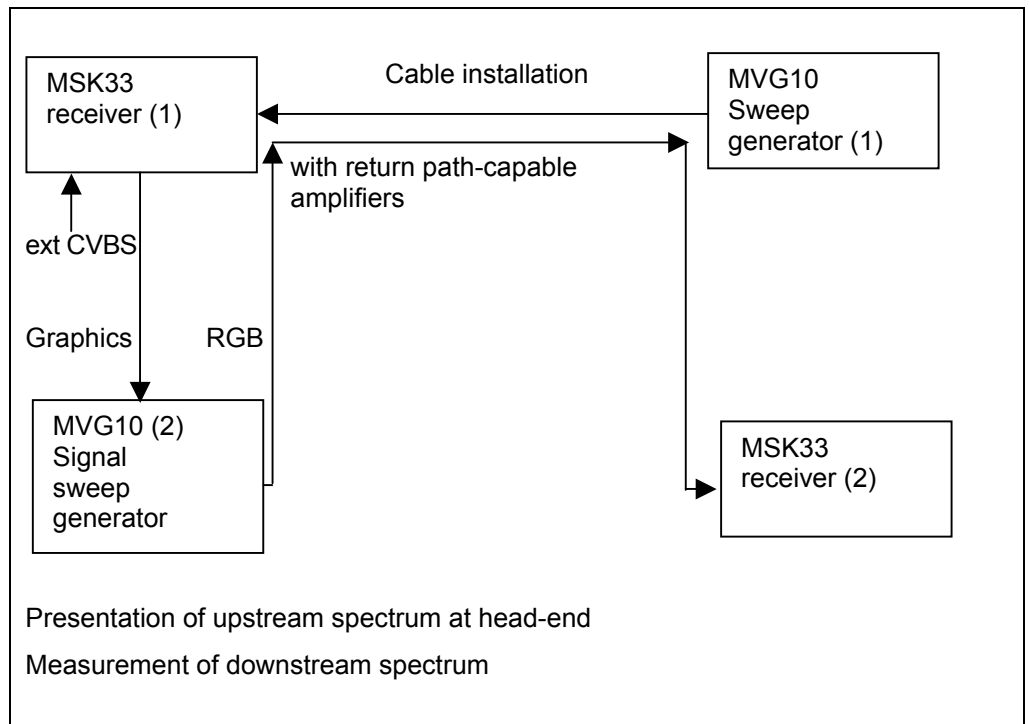
Downstream measurement: 47...860 MHz



Upstream measurement: 4.0...80 MHz



Comfortable upstream 4.0...80 MHz and Downstream 47...860 MHz measurement



Upstream measurement:

The MVG 10 (1) sweeps the return path in the free frequency ranges.

The MSK 33 (1) receives the signals in MVG 10 – tracking mode.

The graphics from the MSK33 (1) are provided to the MVG10 (2) in RGB (60 Hz) and transmitted to the MSK33 (2) on a free downstream channel (attention: double-sideband modulation).

System description and usage

The spectrum at the head-end can be printed out from the MSK 33 (1) using the print command "Prt 999" on the MVG 10 (1).

The command "Clear" clears the spectrum presentation on the MSK 33 (1).

Downstream measurement:

The MVG 10 (2) is switched from signal generator mode to downstream sweep generator mode via the MSK 33 (1) using the command "Fkt A 1" on the MVG 10 (1).

The MVG 10 (2) sweeps the forward path in the free frequency ranges.

The MSK33 (2) receives the signals in MVG 10 – tracking mode.

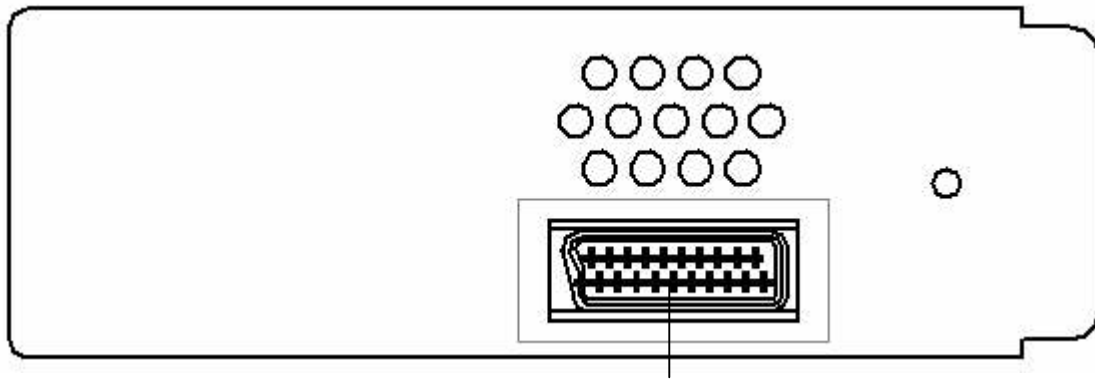
The MVG 10 (2) is switched back to signal generator mode with the command "Fkt A 0" on the MVG 10 (1). This is performed via the turn-on voltage of the SCART line.

Uscart = 12 V effects recall no. 1 on MVG 10.

Uscart = 0 V effects recall no. 0 on MVG 10.

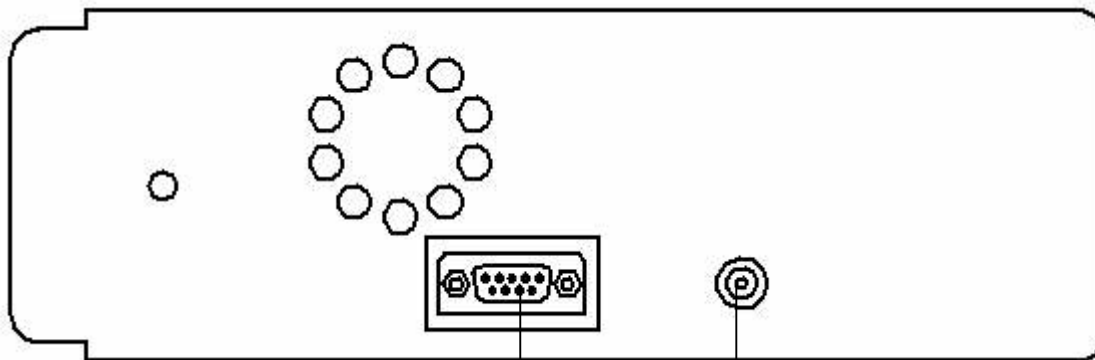
Views, connections and controls

Left-hand side



Scart socket

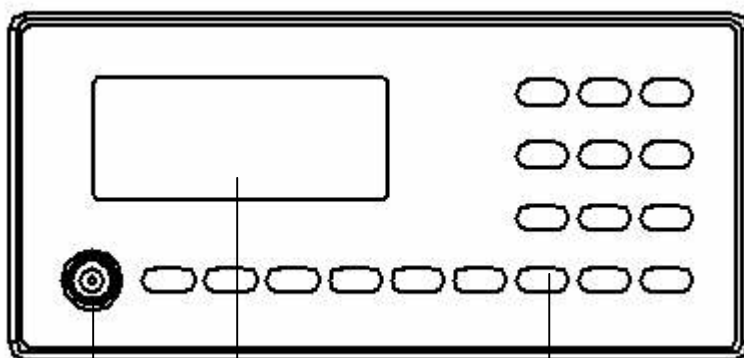
Right-hand side



RS232 socket

Power supply

Frontal view










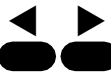









RF output

Display

Keypad

Button functions

The following information explains the operation of the MVG 10. Please use the illustration of the operating concept for assistance.

Button	Function	Display
 <p>On Off</p>	<p>1. Switch on unit when depressed briefly</p> <p>The upper display appears first, then the lower display with the last function that was set</p> <p>2. Switch off unit when depressed for an extended period</p>	<div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;">KATHREIN MVG10</div> <div style="border: 1px solid black; padding: 5px;">NG Store nr: 0</div>
<p>Menu  Select</p>	<p>Confirm selected main or subfunction (see below)</p>	
	<p>Select main and subfunctions</p> <p>Example: Setting Sys Backlight (display backlight).</p> <p>Press  button until "System..." appears in the display,</p> <p> then press , Sys FactSetup is displayed.</p> <p>Menu Select</p> <p>Use  to set to Sys Backlight and</p> <p>use  to switch backlight on/off.</p> <p style="text-align: center;">- +</p>	
 <p style="text-align: center;">- +</p>	<p>Set frequency, channel and signal level values</p>	
 <p style="text-align: center;">0 9</p>	<p>Numerical entry of frequency, channel and signal level values</p>	
<p style="text-align: center;">.</p> <p>S-Ch</p>	<p>Preselection button for special channels</p> <p> Example: Set special channel 25 =     </p> <p style="text-align: center;">S-Ch 2 5</p>	
	<p>"Enter" button for confirming numerical entries</p>	

System settings



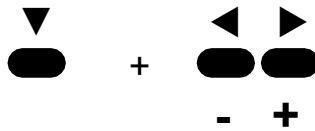
We recommend checking the factory settings before initial start-up.

Please use the operating concept on page 2 for help with understanding the operating sequence.

Function	Button actuation	Display
<p>Switch on unit when depressed briefly</p> <p>The upper display appears first, then the lower display shortly afterwards with the last function that was set</p>	<p>On Off</p>	<div style="border: 1px solid black; padding: 5px; width: fit-content;">KATHREIN MVG10</div> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin-top: 10px;">NG Store nr: 0</div>
<p>Select "System" main function and show battery charge state</p>		<div style="border: 1px solid black; padding: 5px; width: fit-content;">System... Accu 100 %</div>
<p>Confirm selected function</p> <p>Call up factory settings with "Enter"</p>	<p>Menu Select</p> <p style="text-align: center;">←</p> <p style="text-align: center;">Switches to display:</p>	<div style="border: 1px solid black; padding: 5px; width: fit-content;">Sys FactSetup</div> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin-top: 10px;">Sys FactSetup restored</div> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin-top: 10px;">Recall nr: 0</div>
<p>Reselect "System" main function</p>	<p>Menu Select</p>	<div style="border: 1px solid black; padding: 5px; width: fit-content;">Sys FactSetup</div>
<p>Display backlight on/off</p>	<p style="text-align: center;">← →</p> <p style="text-align: center;">- +</p>	<div style="border: 1px solid black; padding: 5px; width: fit-content;">Sys Backlight on/off</div>
<p>Display system software version</p>		<div style="border: 1px solid black; padding: 5px; width: fit-content;">Sys Software V1.3x 30.05.01</div>
<p>Display serial number</p>		<div style="border: 1px solid black; padding: 5px; width: fit-content;">Sys SeriesNr. XXX</div>

System settings

Display units



Sys Unit
dB μ V (dBmv, dBm)

System baud rate



setting not possible

Sys Baudr: 19.2k

Transmission readiness



setting not possible

Sys RTS/CTS
on

Confirm entries

Menu

Select

System..
Accu 100 %

Noise generator



























The noise generator is used for measuring cable installations or sections of cable installations that are not yet occupied with programming.

It generates a broadband noise to evaluate the frequency response in the range from 4 MHz to 1 GHz. The bandwidth can be set to 1 MHz or 7/8 MHz.

Do not use the noise generator if programmes or services are fed into the cable network and/or if subscribers are connected!

Please use the operating concept on page 2 for help with understanding the operating sequence.

Function	Button actuation	Display
Switch on unit when depressed briefly The upper display appears first, then the lower display shortly afterwards with the last function that was set	On  Off 	<div style="border: 1px solid black; padding: 5px; width: fit-content;">KATHREIN MVG10</div> <div style="border: 1px solid black; padding: 5px; width: fit-content;">NG Store nr: 0</div>
Select the "Noise generator" main function Show battery charge state	   	<div style="border: 1px solid black; padding: 5px; width: fit-content;">NoiseGenerator.. Accu 100 %</div>
Confirm selected function Show last signal level set	Menu  Select 	<div style="border: 1px solid black; padding: 5px; width: fit-content;">NG Level XX.X dBµV</div>
Set signal level	   	<div style="border: 1px solid black; padding: 5px; width: fit-content;">NG Level 60.0 dBµV</div>
Enter signal level directly followed by "Enter"	or   	see above
Set bandwidth 1 MHz or 7/8 MHz	     	<div style="border: 1px solid black; padding: 5px; width: fit-content;">NG Bandwidth 1 MHz (7/8 MHz)</div>
Store settings in memory at addresses 0 to 9		<div style="border: 1px solid black; padding: 5px; width: fit-content;">NG Store Nr: 0</div>
Confirm entries	Menu  Select 	<div style="border: 1px solid black; padding: 5px; width: fit-content;">NoiseGenerator.. Accu 100 %</div>













Signal generator



The signal generator is needed to transmit test signals and the screen view from the MSK 33 during "Comfortable Up/Downstream measurement" (see system description). In addition to an internal test picture of coloured bars it has an external modulation input (CVBS/RGB + sound) and is double-sideband modulated.

The channels/frequencies and levels can be selected freely.

Only use the signal generator on free channels so that programmes and services in the cable network are not interrupted. Please use the operating concept on page 2 for help with understanding the operating sequence.

Function	Button actuation	Display
Switch on unit when depressed briefly The upper display appears first, then the lower display shortly afterwards with the last function that was set	On  Off	<div style="border: 1px solid black; padding: 5px; width: fit-content;">KATHREIN MVG10</div> <div style="border: 1px solid black; padding: 5px; width: fit-content;">NG Store nr: 0</div>
Select " Signal generator " main function and show battery charge state	 	<div style="border: 1px solid black; padding: 5px; width: fit-content;">SignalGenerator.. Accu 100 %</div>
Confirm selected function Show last signal level set	Menu  Select	<div style="border: 1px solid black; padding: 5px; width: fit-content;">SG Level XX.X dBµV</div>
Set signal level	  - +	<div style="border: 1px solid black; padding: 5px; width: fit-content;">SG Level 60.0 dBµV</div>
Enter signal level directly followed by " Enter "	or   	see above
Set transmission frequency in MHz	 +   - +	<div style="border: 1px solid black; padding: 5px; width: fit-content;">SG Frequency 224.25 MHz</div>

Signal generator



Enter **transmission frequency** directly followed by **"Enter"**
 Channel frequency inputs with incorrect entries after the point are not accepted!

or

see above

Channel entry - special channels with press

·
 S-Ch first!

SG Channel
 C __

Enter **channel number** directly special channels with press

·
 S-Ch first!

Also switch back to normal channel entry with

or

·
 S-Ch

see above

Set **standards**
 B/G, D/K, I, M, Mj, H

SG Standard
 B/G

Set **modulation**
 int-AV, ext-CVBS, ext-RGB, ext-FM, int-FM

SG Modulation
 int-AV

Store at addresses 0 to 9

SG Store
 Nr: 0

Confirm entries

SignalGenerator..
 Accu 100 %


















Sweep generator



The sweep generator is used to sweep in 10 preset frequency ranges (measuring profiles). The profiles can be programmed to free ranges depending on the channel allocation in the cable network, so that measurement is possible without interrupting or interfering with programmes. The frequencies and levels can be selected freely.

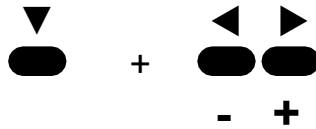
Only use the sweep generator on free channels so that programmes and services in the cable network are not interrupted.

Please use the operating concept on page 2 for help with understanding the operating sequence.

Function	Button actuation	Display
<p>Switch on unit when depressed briefly</p> <p>The upper display appears first, then the lower display shortly afterwards with the last function that was set</p>	<p>On</p>  <p>Off</p>	<div style="border: 1px solid black; padding: 5px; width: fit-content;">KATHREIN MVG10</div> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin-top: 10px;">NG Store nr: 0</div>
<p>Select "Sweep generator" main function and show battery charge state</p>	 	<div style="border: 1px solid black; padding: 5px; width: fit-content;">SweepGenerator.. Accu 100 %</div>
<p>Confirm selected main function</p> <p>Show last level set</p>	<p>Menu</p>  <p>Select</p>	<div style="border: 1px solid black; padding: 5px; width: fit-content;">SwG Level XX.X dBµV</div>
<p>Set signal level</p>	  <p>- +</p>	<div style="border: 1px solid black; padding: 5px; width: fit-content;">SwG Level 60.0 dBµV</div>
<p>Enter signal level directly plus "Enter"</p>	<p>or</p>   	<p>see above</p>
<p>Enter number of measuring profile to be pre-programmed, 0 to 9</p> <p>Incorrect entries are not accepted.</p> 	 <p>+</p>   <p>- +</p>	<div style="border: 1px solid black; padding: 5px; width: fit-content;">SwG FreqRange Nr: X</div>
<p>Enter profile directly plus "Enter"</p> <p>Incorrect entries are not accepted!</p> 	<p>or</p>   	<p>see above</p>

Sweep generator

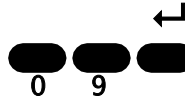
Enter **start frequency**



SwG FreqRange X
Start XXX.XX MHz

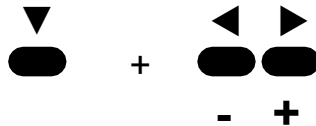
or

Enter frequency directly



see above

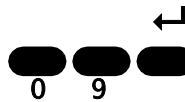
Enter **end frequency**



SwG FreqRange X
Stop XXX.XX MHz

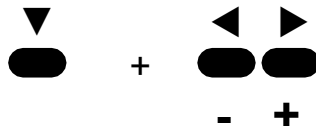
or

Enter frequency directly



see above

50-kHz **steps** from one frequency to next in MHz



SwG FreqRange X
Step X.XX MHz

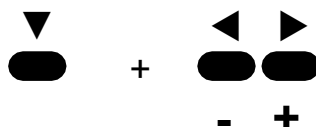
or

Enter frequency directly



see above

Step duration from one frequency to next in ms
(150 ms – 2500 ms)



SwG FreqRange X
XXX ms

or

Enter time directly



see above

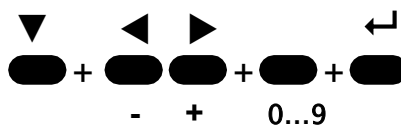
Tracking on/off
Switch sequential control of MSK 33 on/off

No other analysers can be controlled.



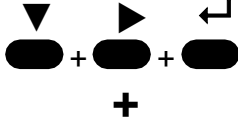

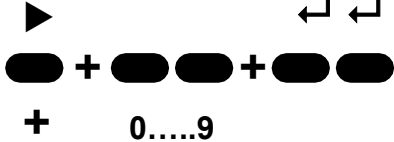






SwG Tracking
on/off

Select pre-programmed measuring profiles (0...9) by entering numbers without space followed by "**Enter**" – the sequence is started and can be tracked on the MSK 33.



SwG SelRange
123..... no run/run

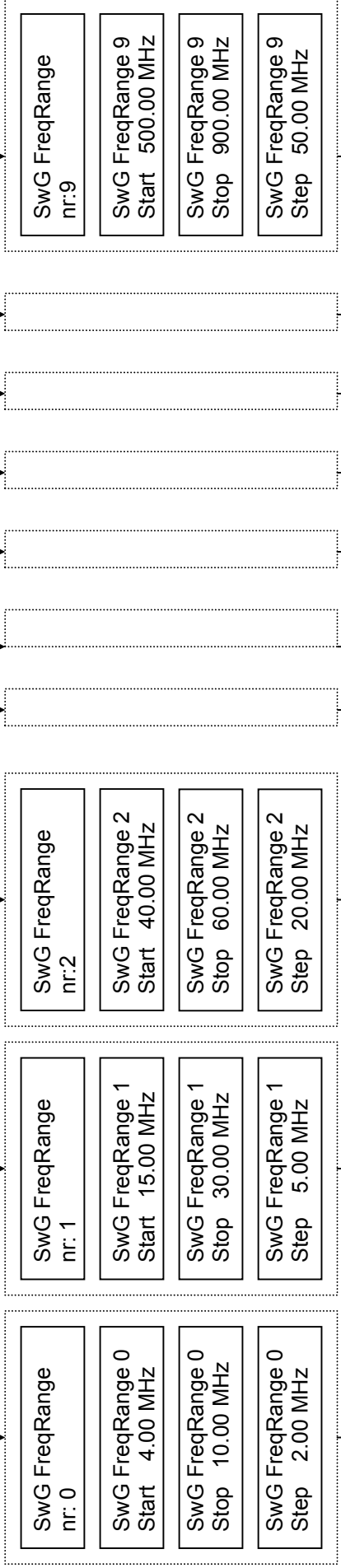
Sweep generator

Clear screen presentation on MSK 33 with "Enter"		<div style="border: 1px solid black; padding: 5px;">SwG ControlData Clear no run</div>
Command to clear spectrum received by MSK33 (MVG10 tracking)		<div style="border: 1px solid black; padding: 5px;">SwG ControlData Clear no run/run</div>
Enter control printout number (up to 3 digits), confirm with "Enter" and run with "Enter"	 <p style="text-align: center;">0.....9</p>	<div style="border: 1px solid black; padding: 5px;">SwG ControlData Prt XXX no run</div>
Command to switch a second MVG10 to stored position "Recall 0" via MSK33 (MSK33 and MVG10 connected via SCART)		<div style="border: 1px solid black; padding: 5px;">SwG ControlData Fkt A 0 no run</div>
Command to switch a second MVG10 to stored position "Recall 1" via MSK33 (MSK33 and MVG10 connected via SCART)		<div style="border: 1px solid black; padding: 5px;">SwG ControlData Fkt A 1 no run</div>
Command to switch the MSK33 video signal from internal graphics to ext. CVBS. The respective signals are relayed to the MVG10 via the SCART socket for modulation.		<div style="border: 1px solid black; padding: 5px;">SwG ControlData Fkt B 1 no run</div>
Command to switch the MSK33 video signal from ext. CVBS to internal graphics. The respective signals are relayed to the MVG10 via the SCART socket for modulation.		<div style="border: 1px solid black; padding: 5px;">SwG ControlData Fkt B 0 no run</div>
Store settings in memory at addresses 0 to 9		<div style="border: 1px solid black; padding: 5px;">SwG Store nr: 0</div>
Confirm entries		<div style="border: 1px solid black; padding: 5px;">ChannelSweep... Accu 100 %</div>

Recall no. (0...9)
 Noise generator
 Signal generator
Sweep generator
 Channel sweep generator
 System

SwG Level
 60.0 dBµV

The respective FreqRange (frequency range)
 can be selected using numbers 0...9.



SwG StepTime
 150 ms

SwG Tracking
 no

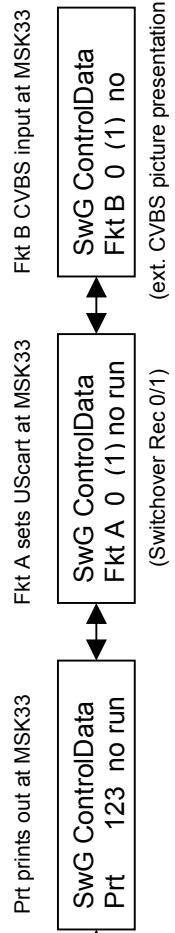
SwG SelRange
 0129..... run

SwG ControlData
 Clear no run

SwG Store
 nr: 9 (0...9)

The functions "Store no. (0...9)" and "Recall no. (0...9)" can be used to store ten full sets of unit settings and call them back up.

Clear clears the screen of MSK33




























Channel sweep generator

The channel sweep generator is used to sweep in 10 preset ranges. The channels can be programmed to free ranges depending on the channel allocation in the cable network, so that measurement is possible without interrupting or interfering with programmes. The channels and signal levels can be selected freely.



Only use the channel sweep generator on free channels so that programmes and services in the cable network are not interrupted.

Please use the operating concept on page 2 for help with understanding the operating sequence.

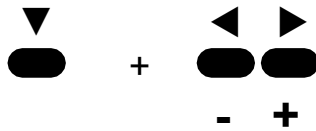
Function	Button actuation	Display
Switch on unit when depressed briefly The upper display appears first, then the lower display shortly afterwards with the last function that was set	On  Off 	<div style="border: 1px solid black; padding: 5px; width: fit-content;">KATHREIN MVG10</div> <div style="border: 1px solid black; padding: 5px; width: fit-content;">NG Store nr: 0</div>
Select " Channel sweep generator " main function and show battery charge state	   	<div style="border: 1px solid black; padding: 5px; width: fit-content;">ChannelSweep... Accu 100 %</div>
Confirm selected main function Show last level set	Menu  Select 	<div style="border: 1px solid black; padding: 5px; width: fit-content;">CSw Level XX.X dBµV</div>
Set signal level	    - +	<div style="border: 1px solid black; padding: 5px; width: fit-content;">CSw Level 60.0 dBµV</div>
Enter signal level directly followed by "Enter"	or   	see above
Enter pre-programmed channel sequence (0...9) Incorrect entries are not accepted!	     +   - +	<div style="border: 1px solid black; padding: 5px; width: fit-content;">CSw ChanRange Nr: X</div>
Enter pre-programmed channel sequence directly + "Enter" Incorrect entries are not accepted!	or   	see above

Channel sweep generator

Enter **start channel**

Special channels with press

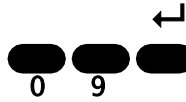
•
S-Ch
first!



CSw ChanRange X
Start C 12

or

Enter channels directly

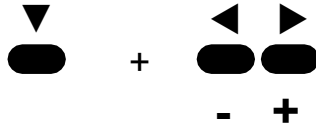


see above

Enter **end channel**

Special channels with press

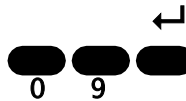
•
S-Ch
first!



CSw ChanRange X
Stop C 30

or

Enter channels directly



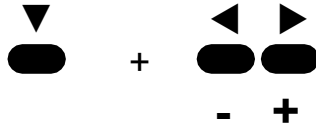
see above

Also switch back to normal
channel entry with

•
S-Ch

Channel steps

(skip a previously defined
number of channels)



CSw StepChan X
Step X

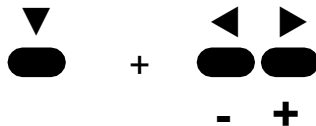
or

Enter **channel steps** directly



see above

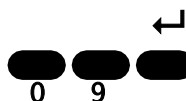
Step duration from one
channel to next in ms



CSw StepTime
XXX ms

or

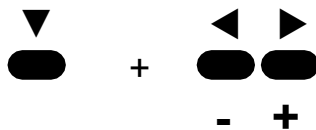
Enter time directly



see above

Modulation

Tracking/int-AV/ext-CVBS/
ext-RGB/ext-FM/int-FM



CSw Modulation
Tracking

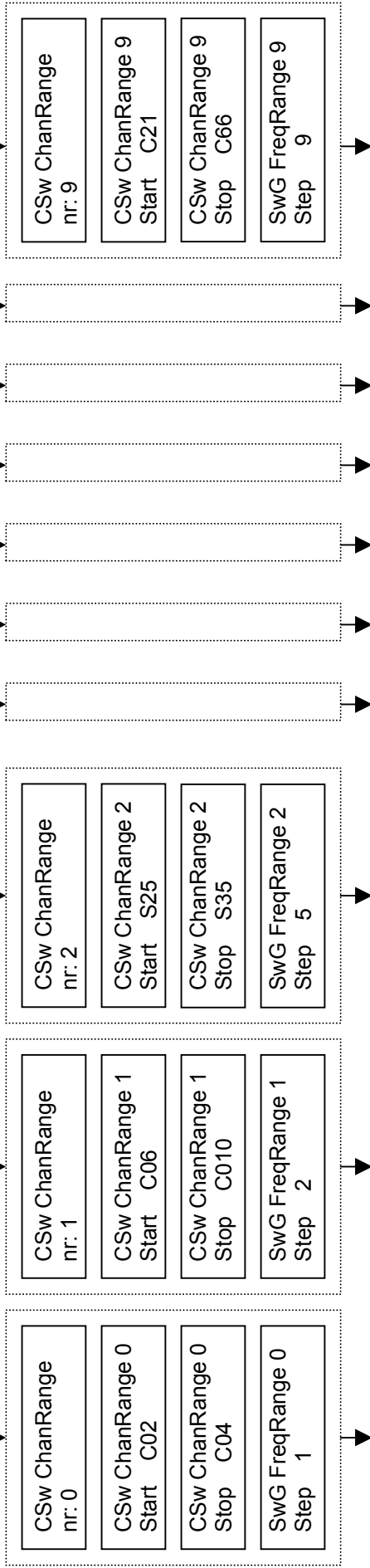
Channel sweep generator

<p>Set standards B/G, D/K, I, M, Mj, H</p>		<div style="border: 1px solid black; padding: 5px;"> CSw Standard B/G </div>
<p>Set the pre-programmed channel ranges to be processed (0...9)</p>		<div style="border: 1px solid black; padding: 5px;"> CSw SelRange no run/run </div>
<p>Command to clear spectrum received by MSK33 (MVG10 tracking)</p>		<div style="border: 1px solid black; padding: 5px;"> CSw ControlData Clear run </div>
<p>Enter control printout number (up to 3 digits), confirm with "Enter" and run with "Enter"</p>	<p style="text-align: center;">+ 0.....9</p>	<div style="border: 1px solid black; padding: 5px;"> CSw ControlData Prt XXX no run </div>
<p>Command to switch a second MVG10 to stored position "Recall 0" via MSK33 (MSK33 and MVG10 connected via SCART)</p>		<div style="border: 1px solid black; padding: 5px;"> CSw ControlData Fkt A 0 no run </div>
<p>Command to switch a second MVG10 to stored position "Recall 1" via MSK33 (MSK33 and MVG10 connected via SCART)</p>		<div style="border: 1px solid black; padding: 5px;"> CSw ControlData Fkt A 1 no run </div>
<p>Command to switch the MSK33 video signal from internal graphics to ext. CVBS. The respective signals are relayed to the MVG10 via the SCART socket for modulation.</p>		<div style="border: 1px solid black; padding: 5px;"> CSw ControlData Fkt B 1 no run </div>
<p>Command to switch the MSK33 video signal from ext. CVBS to internal graphics. The respective signals are relayed to the MVG10 via the SCART socket for modulation.</p>		<div style="border: 1px solid black; padding: 5px;"> CSw ControlData Fkt B 0 no run </div>
<p>Store settings in memory at addresses 0 to 9</p>		<div style="border: 1px solid black; padding: 5px;"> CSw Store nr: 0 </div>
<p>Confirm entries</p>		<div style="border: 1px solid black; padding: 5px;"> ChannelSweep... Accu 100 % </div>

Recall no. (0...9)
 Noise generator
 Signal generator
 Sweep generator
Channel sweep generator
 System

CSw Level
 60.0 dBµV

The respective ChanRange (channel range)
 can be selected using numbers 0...9.



CSw Step Time
 200 ms

The functions "Store no. (0...9)" and "Recall no. (0...9)" can be used to store ten full sets of unit settings and call them back up.

CSw Modulation Tracking

CSw Modulation INT AV

Setting modulation type

CSw Standard B/G

CSw SelRange 0129..... run

CSw ControlData Clear no run

CSw Store nr: 3 (0...9)

Clear clears the screen of MSK33

Prt prints out at MSK33
 CSw ControlData Prt 999 no run

Fkt A sets UScart at MSK33
 CSw ControlData Fkt A 0 (1) no run

Fkt B CVBS input at MSK33
 CSw ControlData Fkt B 0 (1) no run

(Switchover Rec 0/1)











(ext. CVBS picture presentation)

Recall



The **"Recall"** setting is used to call up the setting stored at addresses 0...9 and start the measuring process.

Please use the operating concept on page 2 for help with understanding the operating sequence.

Function	Button actuation	Display
<p>Switch on unit when depressed briefly</p> <p>The upper display appears first, then the lower display shortly afterwards with the last function that was set</p>	<p>On</p>  <p>Off</p> 	<div style="border: 1px solid black; padding: 5px; width: fit-content;">KATHREIN MVG10</div> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin-top: 10px;">NG Store nr: 0</div>
<p>Select "Recall" main function and</p> <p>no.: X</p>	 	<div style="border: 1px solid black; padding: 5px; width: fit-content;">Recall nr: 0</div>
<p>Use the arrow buttons to set the settings stored at an address (0...9).</p>	  <p style="text-align: center;">- +</p>	
<p>Enter number directly and confirm with "Enter"</p>	<p style="text-align: center;">or</p>   	see above
<p>Confirm entry</p>		

Technical data

Frequency range:	4.0 MHz...1000 MHz
Frequency adjustment:	50 kHz
Frequency resolution:	62.5 kHz
Display:	LCD alphanumeric 2 x 16 characters, bar chart; illuminated
Adjustment:	direct frequency and channel entry; +/- step buttons
Sweep ranges:	10 ranges with start/stop and frequency step entry
Channel hopping:	10 ranges with start/stop and channel step entry
Output signal level:	36 dB μ V ...100 dB μ V
Signal level accuracy:	\pm 2dB
Signal level resolution:	0.1 dB
Interference level:	\leq 40 dB μ V (to 90 dB μ V - output signal level)
Noise generator:	4.0 MHz...1000 MHz, Standing wave ratio \pm 2dB
Noise level:	85 dB μ V (BW 1MHz)
Noise level resolution:	1 dB
Output:	75 Ω BNC socket
Modulation (double-sideband):	Test picture, SCART-CVBS SCART RGB FM sound modulation
Power supply:	Internal lead-acid battery 12 V/2.8 Ah External mains adaptor for operating and charging 230 V ~ /50-60 Hz
Weight:	approx. 3 kg (incl. leather bag)
Dimensions, H x W x D:	90(115) x 162 x 235 mm ³ () = incl. bag accessory
EMC/EMD:	CE
Included in delivery:	Leather bag with carry strap, charger

